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EXAMINER

RAY, G

E3M1/1208

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ART UNIT

PAPER NUMBER

16

2308

DATE MAILED:

12/08/93

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on OCT. 6, 93 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), 0 days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152. |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-39 are pending in the application.

Of the above, claims _____ are withdrawn from consideration.

2. ☐ Claims _____ have been cancelled.

3. ☐ Claims _____ are allowed.

4. ☒ Claims 1-39 are rejected.

5. ☐ Claims _____ are objected to.

6. ☐ Claims _____ are subject to restriction or election requirement.

7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. ☐ Formal drawings are required in response to this Office action.

9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable. ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).

10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).

11. ☐ The proposed drawing correction, filed on _____, has been ☐ approved. ☐ disapproved (see explanation).

12. ☐ Acknowledgment is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received
☐ been filed in parent application, serial no. _____; filed on _____.

13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. ☐ Other

EXAMINER'S ACTION

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1. Claims 1-39 are presented for examination.
2. Claims 1-39 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The examiner notes the following ambiguities.

As per claim 1, the phrase "a plurality of bus elements, with each of the plurality of bus elements selectively making a request for access to at least one other bus element" (lines 2-5) is vague and indefinite because it is unclear as to how the plurality of bus elements selectively makes one request. Clarification and/or rephrasing is required.

As per claims 2-29, the claims incorporate the deficiencies of the parent claim.

As per claim 30, the claim recites first, second, third and fourth predetermined direction. However, it is unclear as to what determines beforehand, i.e., predetermines the first, second, third and fourth direction. Clarification and/or rephrasing is required to show proper antecedent basis.

As per claims 31-32, the claims incorporate the deficiencies of the parent claim.

As per claim 33, this claim recites a method. However, the claim has similar problems as in claim 33.

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As per claims 34-39, the claims incorporate the deficiencies of the parent claim.

3. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

4. Claims 1-19 and 30-35 and 37-39 are rejected under 35 U.S.C. § 103 as being unpatentable over US Patent 4,837,682 issued to Culler in view of US Patent 5,168,547 issued to Miller et al. and US Patent 4,991,084 issued to Rodiger et al.

As per claim 1, Culler teaches the claimed:

"a plurality of bus elements ...": Culler's plurality of bus elements ... (See Fig. 6, elements 508, 544, 548, 522 and 528);

"a central unit having a plurality of bus inputs and a plurality of bus outputs": Culler's central unit having a plurality of bus inputs and a plurality of bus outputs (See Fig 5, element 600); and

"arbitration logic connected to the plurality of bus inputs of the central unit ... for granting each of the bus elements access to the at least one other bus element": Culler's arbitration logic connected to the plurality of bus inputs of the central unit ... for granting each of the bus elements access to the at least one other bus element (See col. 8, lines 36-42).

The reference of Culler fails to expressly teach the limitations of "a first plurality of uni-directional point-to-point buses ... and a second plurality of uni-directional point to point buses ..." (lines 14-20). However, the above feature is well known to one of ordinary skill in the art at the time the invention was made as evidenced by Miller et al. The reference of Miller et al. teaches the above feature in Fig. 9, and col. 24, lines 65-66. It would be obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Culler to implement uni-directional buses because both the prior art system are analogous to access shared resources via arbitration and the above feature of Miller et al. would allow Culler's system to accomplish high speed processing efficiently which is the main objective of any system designer.

Furthermore, the reference of Culler fails to expressly teach the limitations of "point-to-point coupling of a particular one of the plurality of bus elements with one other bus element".

However, the above feature is well known to one of ordinary

skill in the art at the time the invention was made as evidenced by Rodiger et al. The reference of Rodiger et al. teaches the above feature in Fig. 1, elements 51-54. It would be obvious to one of ordinary skill in the data processing art at the time the invention was made to modify the system of Culler to implement the above feature of Rodiger et al. because both the prior art system are analogous to access shared resources via arbitration and the above feature of Rodiger et al. would allow Culler's system to simultaneously couple data from a plurality of processors to the requested memory modules under arbitration control (the reference of Rodiger et al. teaches that in abstract, lines 4-6). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Culler using the above features of Miller and Rodiger to obtain the claimed invention.

Remarks

The examiner recognizes that references cannot be arbitrarily combined and there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. However, there is no requirement that a motivation to make the modification be expressly articulated. It is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art.

As per claims 2-4, the limitations of the claims, i.e., "system further includes a state device" (claim 2), use of "OR gate" (claim 3), "multiplexer" (claim 4) do not patentably distinguish over the prior art because these are art recognized equivalents and thus it is a matter of specific engineering choice. The above concept is so well known that no reference is considered necessary. See MPEP 706.02a.

As per claims 5-19, these claims are rejected for similar reasons as in claims 2-4.

As per claim 30, this claim is rejected for similar rationale as in claim 1.

As per claims 31-32, these claims are rejected for similar reasons as in claims 2-4.

As per claim 33, this claim recites a method which parallels apparatus claim 1. In teaching the construction and use of the device the combination of the references of Culler, Miller et al. and Rodiger et al. teaches a corresponding method.

As per claim 34, Culler teaches the claimed:

"wherein the bus elements include a plurality of central processing units and a shared memory": Culler's bus elements include a plurality of central processing units and a shared memory (See Fig. 6).

As per claim 35, Culler teaches the claimed:

"selecting step further comprises selecting between the

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inputs on the first buses from the central processing unit and the bus from the memory": Culler's selecting inputs from the processors and memory (See col. 8, lines 12-25).

As per claims 37-38, these claims are rejected for similar reasons as in claims 2-4.

As per claim 39, Culler teaches the claimed:

"wherein a bus element includes a CPU": Culler's bus element includes a CPU (see Fig. 6, element 544).

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gopal C. Ray whose telephone number is (703) 305-9647.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Gopal C. Ray
GOPAL C. RAY
PATENT EXAMINER
GROUP 2300